FORUM

Toward a Greener Revolution: *Creating More Healthful Food Systems*

For centuries, the success of agriculture has been measured by the number of bushels harvested per acre. But it's becoming increasingly clear that food producers in the future will have to do more than put up big yield numbers to meet the nutritional needs of the world's population.

Chronic malnutrition, even in countries where people get enough calories, is forcing researchers to take a closer look at the micronutrient content of the foods produced by agricultural systems.

While some developing nations still fail to meet the basic caloric needs of their people, it is even more alarming that new research shows many developing—and even developed—countries are producing agronomically successful crops that fail to provide adequate nutrients to meet essential health and nutritional needs. Estimates are that 40 percent of the world's people do not receive adequate and balanced nutrients to meet their basic dietary requirements.

Some 840 million people have insufficient intakes of protein and calories. And more than 2 billion consume diets that are less diverse than they were 30 years ago—the result of overdependence on a shrinking number of high-yielding staples. The result: A growing number of people are consuming diets with inadequate levels of micronutrients such as vitamin A, iodine, iron, selenium, and zinc.

At greatest risk are the world's poor—especially women, infants, and children. They become caught up in a vicious cycle of malnutrition, poor health, and poverty—without much hope for a better standard of living. In the United States, feeding programs such as USDA's Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) help alleviate the problem. But the disadvantaged in developing nations often do not have access to such assistance.

The consequences of micronutrient malnutrition, or "hidden hunger," are enormous in terms of a nation's healthcare costs, lost productivity, and sluggish development. For example, deficiencies of iron, iodine, and zinc lead to increased mortality and morbidity rates, decreased cognitive abilities in children born to deficient mothers, reduced family livelihood, and immense suffering among those afflicted.

Even in North America, compromised health related to improper diet occurs. For example, it is common to find obesity and iron deficiency anemia among premenopausal women, as well as low birth weights, diabetes, and zinc deficiency among children in certain population groups.

According to a 1996 report published by USDA's Economics Research Service, of the 10 leading causes of death in the United States, 4 are related to improper diet: coronary heart disease, cancer, stroke, and diabetes. These diseases account for over half of the deaths in the United States each year. Possibly 20 percent of them could be prevented by proper diets. These diet-related chronic diseases cost the U.S. economy an estimated $250 billion annually in medical treatment and lost worker productivity.

We must find sustainable ways to produce accessible food supplies of adequate quantity and nutritional quality that promote health.

The Agricultural Research Service is an ideal agency for human nutrition research because of its dual mission to solve basic problems in both agricultural production and human nutrition. Among the agency's many laboratories, the U.S. Plant, Soil, and Nutrition Laboratory at Ithaca, New York, is one of the few laboratories in the world looking at this problem from a holistic vantage point.

The laboratory's mission is to improve human and animal health through research on nutrient movement throughout the soil-plant-animal food chain. Its findings are used to improve the nutritional quality and safety of plant-based foods worldwide.

This holistic approach emphasizing the functional relationship between all aspects of food production, acquisition, and use offers new hope for providing sustainable solutions to food system failures. But holistic solutions cannot provide short-term fixes. They are by nature long term—requiring long-term commitment by government and institutions to succeed.

We must begin now if we are to alleviate the misery and correct the consequence of the world's failing food systems. With 2 billion people suffering from poor nutrition around the globe, nations must produce not only more food, but more nutritious food.

This will require a change in how we think about agriculture. A holistic approach to food production could hasten Third World development by improving human health and well-being, helping to bring about a "greener" revolution.

Ross M. Welch
U.S. Plant, Soil, and Nutrition Laboratory
Ithaca, New York